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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/988,208
Filing Date: November 19, 2001
Appellant(s): OHHASHI, KAZUYUKI

Bruce H. Bernstein
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed November 6, 2009 appealing from the Advisory Office action mailed August 5, 2009.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings, which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,956,328	Sato	09-1999
The Instant Application's Disclosed Prior Art	N/A	N/A

(9) Grounds of Rejection

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 25-31 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato, further in view of the instant application's disclosed prior art.

As to claim 25, Sato teaches a phase offset calculator (Fig. 1, means 102, 201; Fig. 2, means 201, 302, and 303) comprising: a sign inversion circuit (phase shifter 201) that performs a sign inversion of input signed binary data to a phase offset Θ of multiple 90° to output the phase offset calculation intermediate components ; a phase offsettter a second phase offset smaller than 90° with the signal output from the sign inversion circuit (Fig. 1,means 202; Col. 4, Lines 44-67; Col. 5, Lines 1-53). Sato does not expressly teach when sign of the signed binary data is inverted prior to the amplitude of

the signal is adjusted and the phase offsetting is performed after the amplitude adjustment. One of ordinary skill in the art would recognize that it is obvious and/or a matter of design choice to place the amplitude adjuster between the sign inverter and the phase offsetter in order to improve the level of the received signal as it is evidenced by the instant application's disclosed prior art (e.g. SRI and SRQ; Fig. 4B, means 406 and 407, pg. 1-2).Therefore, it would have been obvious to one of ordinary skill in the art to adjust amplitude before the phase offset calculation step as taught by the instant application's disclosed prior art in order to improve the level of a reception signal (Pg. 2, Lines 1-5) and compensates for the amplitude variations of the signal to be received by the receiver.

As to claim 26, Sato discloses a signal mapper for mapping a QPSK modulation signal comprising: a sign inversion circuit (phase shifter 201) that performs a sign inversion of input signed binary data to a phase offset Θ of multiple 90° to output the phase offset calculation intermediate components ; a phase offsettter a second phase offset smaller than 90° with the signal output from the sign inversion circuit (Fig. 1,means 202; Col. 4, Lines 44-67; Col. 5, Lines 1-53). Sato does not expressly teach when sign of the signed binary data is inverted prior to the amplitude of the signal is adjusted and the phase offsetting is performed after the amplitude adjustment. One of ordinary skill in the art would recognize that it is obvious and/or a matter of design choice to place the amplitude adjuster between the sign inverter and the phase offsetter in order to improve the level of the received signal as it is evidenced by the instant application's disclosed prior art (e.g. SRI and SRQ; Fig. 4B, means 406 and 407, pg. 1-

2).Therefore, it would have been obvious to one of ordinary skill in the art to adjust amplitude before the phase offset calculation step as taught by the instant application's disclosed prior art in order to improve the level of a reception signal (Pg. 2, Lines 1-5) and compensates for the amplitude variations of the signal to be received by the receiver.

As to claim 27, Sato further discloses that a fixed phase offset circuitry provides a predetermined amount of a fixed phase offset (Fig. 1, means 108), wherein said fixed phase offset circuitry controls a total phase offset amount with the phase offset implemented by the sign inverter to become a desired offset amount (Col. 4, Lines 44-67, Table I; Col. 5, Lines 37-60, Table II, means 202).

As to claim 28, Sato teaches a signal mapper for mapping a QPSK modulation signal comprising: a sign inversion circuit (phase shifter 201) that performs a sign inversion of input signed binary data to a phase offset Θ of multiple 90° to output the phase offset calculation intermediate components ; a phase offsettter a second phase offset smaller than 90° with the signal output from the sign inversion circuit (Fig. 1,means 202; Col. 4, Lines 44-67; Col. 5, Lines 1-53). Sato does not expressly teach when sign of the signed binary data is inverted prior to the amplitude of the signal is adjusted and the phase offsetting is performed after the amplitude adjustment; and a transmission controller that provides control information to the signal point mapper based on a message included in a reception signal from a receiver that receives communication signals from the CDMA transmission apparatus. One of ordinary skill in the art would recognize that it is obvious and/or a matter of design choice to place the

amplitude adjuster between the sign inverter and the phase offsetter in order to improve the level of the received signal as it is evidenced by the instant application's disclosed prior art (e.g. SRI and SRQ; Fig. 4B, means 406 and 407, pg. 1-2).Therefore, it would have been obvious to one of ordinary skill in the art to adjust amplitude before the phase offset calculation step as taught by the instant application's disclosed prior art in order to improve the level of a reception signal (Pg. 2, Lines 1-5) and compensates for the amplitude variations of the signal to be received by the receiver. The instant application's disclosed prior art further teaches a transmission controller providing control information from a remote source to control the operation of the signal point mapper that includes an amplitude adjuster and a phase offsetting circuitry, wherein the control information is based on a message included in a received signal from a receiver that receives communication signals from the CDMA transmission apparatus (Pg. 1, Lines 16-28; Pg. 2, Lines 1-5). Therefore, it would have been obvious to one of ordinary skill in the art to control the operation of the signal point mapper that includes a sign inverter, an amplitude adjuster, and a phase offsetting circuitry based on a control signal received from a remote source as taught by the instant application's disclosed prior art to improve the level of a reception signal and clearly distinguish between interference signals from other mobile stations and the original reception signal (Pg. 2, Lines 1-5).

As to claim 29, Sato further discloses that a fixed phase offset circuitry that provides a predetermined amount of a fixed phase offset (Col. 4, Lines 44-67, Table I; Col. 5, Lines 37-60, Table II, means 202).

As to claims 30-31, the instant application's disclosed prior art further discloses that the phase and amplitude can be controlled for every transmit channel (Pg. 1, Lines 16-28; Pg. 2, Lines 12-20).

As to claim 33, Sato teaches a signal mapper for mapping a QPSK modulation signal comprising: a sign inversion circuit (phase shifter 201) that performs a sign inversion of input signed binary data to a phase offset Θ of multiple 90° to output the phase offset calculation intermediate components ; a phase offsettter a second phase offset smaller than 90° with the signal output from the sign inversion circuit (Fig. 1,means 202; Col. 4, Lines 44-67; Col. 5, Lines 1-53). Sato does not expressly teach controlling the phase offset circuit based on a signal from a remote source. The instant application's disclosed prior art teaches a transmission controller that provides control information from a remote source to control the operation of the signal point mapper that includes an amplitude adjuster and a phase offsetting circuitry, wherein the control information is based on a message included in a received signal from a receiver that receives communication signals from the CDMA transmission apparatus (Pg. 1, Lines 16-28; Pg. 2, Lines 1-5). Therefore, it would have been obvious to one of ordinary skill in the art to control the operation of the signal point mapper that includes a sign inverter, an amplitude adjuster, and a phase offsetting circuitry based on a control signal received from a remote source as taught by the instant application's disclosed prior art to improve the level of a reception signal and clearly distinguish between interference signals from other mobile stations and the original reception signal (Pg. 2, Lines 1-5).

As to claim 34, Sato discloses providing the sign inverted signal to phase shifter circuitry by using at least one switch (Fig. 2, means 301).

As to claim 35, The instant application's disclosed prior art teaches an amplitude adjustment circuit that adjusts the amplitude of the phase offset calculation intermediate components before being inputted to the phase shifter (e.g. SRI and SRQ; Fig. 4B, means 406 and 407). Therefore, it would have been obvious to one of ordinary skill in the art to adjust amplitude before the phase offset calculation step as taught by the instant application's disclosed prior art in order to improve the level of a reception signal (Pg. 2, Lines 1-5) and compensates for the amplitude variations of the signal to be received by the receiver.

(10) Response to Argument

Examiner discusses the claims in the same order as the Appellant.

Claims 25-31 and 33-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sato, further in view of the instant application's disclosed prior art.

I. Regarding independent claims 25, 26, and 28, pages 9-12, appellant argues "The entirety of functionality of QPSK spreading circuit 102 in SATO is analogous to the entirety of the functionality of phase offset calculator 407 in Appellant's disclosed prior art... A modification of SATO with teachings of Appellant's disclosed prior art could result in a configuration in which amplitude multiplier 406 is provided to SATO, so that amplitude multiplier 406 performs signal processing prior to QPSK spreading circuit 102... Figure 1 of SATO

already shows power amplifier 106 after the QPSK spreading circuit 102, so there is no reason to replace power amplifier 106 in SATO with amplitude multiplier 406 in Appellant's disclosed prior art."

In response to the first argument made by the Appellant, Examiner disagrees with the Appellant because, as it was explained previously, one of ordinary skill in the art would recognize that amplitude adjustment process and phase adjustment process are necessary in the IMT2000-compliant W-CDMA (see instant specification, pg. 1-2) so as to improve the level of a reception signal and clearly distinguish between interference signals form other mobile stations and the original reception signal (see lines 1-5 on page 2 of the instant application).

Sato teaches a QPSK transmission system that employs a sign inverter (fig. 1, means 201) that performs a sign inversion of input signed binary data to a phase offset Θ of multiple 90° to output the phase offset calculation intermediate components; a phase offsetter that provides a second phase offset smaller than 90° with the signal output from the sign inversion circuit (fig. 1, means 202; col. 4, lines 44-67; col. 5, lines 1-53). Sato does not expressly teach placing an amplitude adjuster between the sign inverter and the phase offsetter. On the other hand, the instant application's disclosed prior art teaches placing an amplitude adjuster prior to a phase offset calculation that is functionally equivalent to both the sign inverter and the phase offsetter.

Therefore, it would be obvious to place an amplitude adjuster in Sato's QPSK transmission system so as to improve the level of a reception signal.

Unlike the Appellant's assertion that placing the amplitude adjuster makes it possible to reduce the amount of phase offset calculation required in the prior art as shown in figure 4B, the instant invention is actually directed to a phase offset calculation, not the placement of the amplitude adjuster. In particular, the instant invention is directed to using two phase offset circuitries, wherein the first one is a sign inverter to obtain a first phase offset of multiple of 90 degrees and the second one provides a second phase offset of smaller than 90 degrees. This two-stage phase offset configuration (that is functionally equivalent to sign inventor 401 and phase offset calculation 403 of the present invention) simplifies the phase offset calculation process.

Furthermore, as it was explained in previous office actions (see final office action dated April 9, 2009 and advisory action dated August 5, 2009), the placement of the amplitude adjuster does not affect the phase of the input signed binary data or vice versa as they are two mutually exclusive processes and this can be best viewed in the illustration provided by the Appellant in the appeal brief dated November 6, 2009 (pg. 13), which shows no matter how the phase of the input signed binary data is manipulated its amplitude remains the same.

In addition, one of ordinary skill in the art would recognize that rearranging parts of this particular invention involves only routine skill in the art. In re Japikse, 86 USPQ 70.

Therefore, it would have been obvious to one of ordinary skill in the art to place the amplitude adjuster between the sign inverter and the phase offset calculation circuit of Sato, or before both the sign inverter and the phase offset calculation circuit of Sato, or after the sign inverter and the phase offset calculation circuit of Sato as long as the amplitude adjustment is performed in order to comply with the IMT2000 W-CDMA requirements and to improve the level of a reception signal and to clearly distinguish between interference signals from other mobile stations and the original received signal (spec. pg. 2, lines 2-5).

Moreover, Examiner submits "*Prior art is not limited just to the references being applied, but includes the understanding of one of ordinary skill in the art. The prior art reference (or references when combined) need not teach or suggest all the claim limitations, however, Office personnel must explain why the difference(s) between the prior art and the claimed invention would have been obvious to one of ordinary skill in the art. The "mere existence of differences between the prior art and an invention does not establish the invention's nonobviousness." Dann v. Johnston, 425 U.S. 219, 230, 189 USPQ 257, 261 (1976). The gap between the prior art and the claimed invention may not be "so great as to render the [claim] nonobvious to one reasonably skilled in the art."Id . In determining obviousness, neither the particular motivation to make the claimed invention nor the problem the inventor is solving controls. The proper analysis is whether the claimed invention would have been obvious to one of ordinary skill in*

the art after consideration of all the facts. See 35 U.S.C. 103(a). Factors other than the disclosures of the cited prior art may provide a basis for concluding that it would have been obvious to one of ordinary skill in the art to bridge the gap. The rationales discussed below outline reasoning that may be applied to find obviousness in such cases." (MPEP section 2141).

Therefore, Examiner submits that it would have been obvious to one of ordinary skill in the art to place the amplitude adjuster between the sign inverter and the phase offsetter because no matter how the phase of the input signed binary data is manipulated its amplitude remains the same.

II. Regarding independent claims 28 and 33, page 17, the Appellant argues "There is no feature of SATO or Appellant's disclosed prior art that discloses controlling the second phase offsetting based on a signal from a remote source. At no time has the Examiner established that any combination of SATO and Appellant's disclosed prior art would result in such features."

In response to the second argument made by the Appellant, Examiner disagrees with the Appellant because the instant application's disclosed prior art teaches a transmission controller that provides control information from a remote source to control the operation of the signal point mapper that includes an amplitude adjuster and a phase offsetting circuitry, wherein the control information is based on a message included in a received signal from a receiver that receives communication signals from the CDMA transmission apparatus (Pg. 1, Lines 16-28; Pg. 2, Lines 1-5).

Therefore, it would have been obvious to one of ordinary skill in the art to control the operation of the signal point mapper that includes a sign inverter, an amplitude adjuster, and a phase offsetting circuitry based on a control signal received from a remote source as taught by the instant application's disclosed prior art to improve the level of a reception signal and clearly distinguish between interference signals from other mobile stations and the original reception signal (Pg. 2, Lines 1-5).

III. Regarding dependent claims 29-31 and 34-35, the Appellant does not argue the individual limitations of dependent claims 29-31 and 34-35. Therefore, the response to argument(s) for the recited claims is similar to the response to argument(s) provided for claims 28 and 33 respectively.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

1Respectfully submitted,

/Freshteh N Aghdam/

Examiner, Art Unit 2611

Conferees:

/CHIEH M FAN/

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